

**WHAT IS CLAIMED IS:**

1. A measuring transducer operable to transmit an analog output signal over a two-wire line, said transducer comprising:

a sensor operable to convert a measured quantity into a sensor signal;

an analog-to-digital converter connected to said sensor and operable to digitize the sensor signal;

an arithmetic-logic unit operable to process the digitized sensor signal into a setpoint value; and

an output circuit controlled by said arithmetic-logic unit and connectable to the two-wire line, wherein the setpoint value is used to adjust, in said output circuit, the analog output signal on the two-wire line, said output circuit comprising a plurality of resistors which detect the analog output signal and supply the analog output signal, or a signal derived directly therefrom, to said analog-to-digital converter, and said arithmetic-logic unit is configured to determine any deviation between the analog output signal and the setpoint value.

2. A measuring transducer as claimed in claim 1, further comprising:

a data interface operable to transmit or display information regarding the determined deviation.

3. A measuring transducer as claimed in claim 1, wherein said arithmetic-logic unit is operable to correct the setpoint value as a function of the determined deviation in such a way that the deviation between the analog output signal that is adjusted with the corrected setpoint value and a non-corrected setpoint value is minimized.

4. A measuring transducer as claimed in claim 1, further comprising a multiplexer, wherein the sensor signal and the analog output signal, or the signal derived therefrom, are supplied to said analog-to-digital converter via said multiplexer.
5. A measuring transducer as claimed in claim 1, wherein the sensor signal and the analog output signal, or the signal derived therefrom, are each supplied to different inputs of said analog-to-digital converter.
6. A measuring transducer operable to transmit an analog output signal over a two-wire line, said transducer comprising:
  - a sensor operable to convert a measured quantity into a sensor signal;
  - an analog-to-digital converter connected to said sensor and operable to digitize the sensor signal;
  - an arithmetic-logic unit operable to process the digitized sensor signal into a setpoint value; and
  - an output circuit controlled by said arithmetic-logic unit and connectable to the two-wire line, wherein the setpoint value is used to adjust, in said output circuit, the analog output signal on the two-wire line, said output circuit comprising a resistor means which detects the analog output signal and supplies the analog output signal, or a signal derived directly therefrom, to said analog-to-digital converter, and said arithmetic-logic unit is configured to determine any deviation between the analog output signal and the setpoint value.